

# SEQUENCE LISTING

<110> Sapporo Breweries Ltd.

<120> A method for detecting and determining lactic acid bacteria

<130> FP05-0057-00

<150> JP 2004-040, 381

<151> 2004-02-17

<160> 30

<170> PatentIn version 3.1

<210> 1

<211> 1565

<212> DNA

<213> Lactobacillus hexosus

<220>

<221> source

<222> (1).. (1565)

<223> strain="SBC8050"

<400> 1

```

ttggagagtt tgatcctggc tcaggacgaa cgctggcggc gtgcctaata catgcaagtc      60
gaacgcacag atattaacag aagctgcttg cagtggaagy taattgatgt gagtggogga      120
cgggtgagta acacgtgggt aacctaccca aaagtggggg ataacatttg gaaacagatg      180
ctaataccgc ataatttaag tgaccacatg gtcacttaat gaaagatggy ttcggctatc      240
acttttgat ggacccgcgg cgtattagct agttggtggg ataacggcct accaaggcga      300
tgatacgtag ccgacctgag agggtaatcg gccacattgg gactgagaca cggcccaaac      360
tctacggga ggcagcagta gggaatcttc cacaatggac gaaagtctga tggagcaacg      420
ccgcgtgagt gaagaagggt ttcggatcgt aaaactctgt tgttgagaa gaacagggac      480
tagagtaact gttagtctta tgacggtatc caaccagaaa gccacggcta actacgtgcc      540
agcagccgcg gtaataccta ggtggcaagc gttgtccgga tttattgggc gtaaagcgag      600
cgcaggcggg tttttaagtc tgatgtgaaa gccttcggct taaccgaaga agtgcattag      660
aaactgggaa acttgagtgc agaagaggag agtggaaact catgtgtagc ggtgaaatgc      720
gtagatatat ggaagaacac cagtggcgaa ggccgctctc tggctctgta ctgacgctga      780
ggctcgaaaag tatggggagc gaacaggatt agataccctg gtagtccata ccgtaaacga      840
tgaatgctaa gtgttgagg gtttcgccc ttcagtctg cagctaacgc attaagcatt      900
ccgcctgggg agtacgaccg caagggtgaa actcaaagga attgacggg gcccgacaaa      960
gcggtggagc atgtggttta attcgaagct acgcaagaa ccttaccagg tcttgacatc     1020
ctttgaccac ttagagata cagctttccc ttccgggaca aagtacagg tggatcatgg     1080
ttgtcgtcag ctctgtctgt gagatgttgg gtttaagtccc gcaacgagcg caacccttat     1140
gactagtgtc cagcattaag ttgggcactc tagtgagact gccggtgaca aaccggagga     1200
agggtgggat gacgtcaaat cagcatgccc cttatgacct gggctacaca cgtgctacaa     1260
tggttggtac aacgattgac gaacccgcga gggttaagcta atctcttaaa gccaatctca     1320
gttcggattg taggctgcaa ctgcctaca tgaagtcgga atcgctagta atcgcgatc     1380
agcacgccgc ggtgaatacg ttccggggcc ttgtacacac cgcocgtcac accatgagag     1440
tttgaacac ccgaagccgg tgggtaacc tctatgagga gctaaccgtc taaggtgga     1500
cagatgattg ggggtgaagtc gtaacaaggt agccgtagga gaacctgcgg ctggatcacc     1560

```

tcctt 1565

<210> 2  
 <211> 517  
 <212> DNA  
 <213> Lactobacillus hexosus

<220>  
 <221> source  
 <222> (1).. (517)  
 <223> strain="SBC8050"

<400> 2  
 cagttctgtg ttacatggt gttggtgctt cagtcgttaa cgctttgtct agccaattaa 60  
 acgttgaggt ccttaaagaa gaaaaacgct actatatgga ttcaagcgc ggtaaagtta 120  
 atactgagct taaggttagc ggtacaattc cagaacatga acacggcaca attgttcatt 180  
 ttggcctga tcatgatatt tttagggaaa caaccgttta tgatattaaa attttaacaa 240  
 cgcgaaattcg tgagttggoc tttttgaata agggtttacg aattagcatt gaagatttac 300  
 gtcctgagaa accgaccaa gaagttttcc actatgaagg tggcattaag agttacgttg 360  
 agtatttaga caacggtaag cacgatcttt ttccagagcc aatttacgtg gaaggtagc 420  
 aaaagggat taagttgaa gtgtctttac aatacactga cgattaccac actaacttga 480  
 tgaccttcgc caataatatt catacctatg aagtgga 517

<210> 3  
 <211> 1526  
 <212> DNA  
 <213> Lactobacillus pseudocollinoides

<220>  
 <221> source  
 <222> (1).. (1526)  
 <223> strain="SBC8057"

<400> 3  
 tgatcctggc tcaggatgaa cgctggcggc gtgcctaata catgcaagtc gaacgcattcc 60  
 cgtaaataga agtgcttgca cggattttaa catcggatga gtggcgaact ggtgagtaac 120  
 acgtgggtaa cctgccaga agcaggggat aacacttgga aacagggtgct aataccgtat 180  
 aacaacaaaa accgcatggt ttttgtttga aaggtggtt cggctatcac ttctggaagg 240  
 acccgcgcg tattagctag ttggtggagt aacggttcac caaggcaatg atacgtagcc 300  
 gacctgagag ggtaatcggc cacattggga ctgagacacg gcccaaactc ctacgggagg 360  
 cagcagtagg gaattctcca caatggacga aagtctgatg gagcaacgcc gcgtgagtga 420  
 agaaggtttt cggatcgtaa aactctgttg ttgaagaaga acacgtttga gagtaactgt 480  
 tcagacgttg acggtattca accagaaagc caccgctaac tacgtgccag cagccgcggt 540  
 aatacgtagg tggcaagcgt tatccggatt tattgggcgt aaagcgagcg caggcggtta 600  
 cttaagtctg atgtgaaagc cttcggctta accggagaag tgcatcggaa actgggtaac 660  
 ttgagtgcag aagaggacag tggaaactcca tgtgtagcgg tgaatgcgt agatatatgg 720  
 aagaacacca gtggcgaagg cggctgtctg gtctgtaact gacgtgagg ctgaaagca 780  
 tgggtagcga acaggattag ataccctggt agtccatgcc gtaaaccgat aatgctaggt 840  
 gttggagggt ttccgccctt cagtcgcgca gctaaccgat taagcattcc gcctggggag 900  
 tacgaccgca aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat 960  
 gtgttttaat tcgaagctac gcgaagaacc ttaccagtc ttgacatact gtgtaacct 1020  
 aagagattag gcgttcctt cggggacgca gatacaggtg gtgcatggct gtctcagct 1080

cgtgtcgtga gatgttgggt taagtccgc aacgagcgca acccttattg tcagttgcc 1140  
 gcatttagtt gggcactctg gcgagactgc cggtagacaaa cgggaggaag gtggggatga 1200  
 cgtcaagtca tcatgccctt tatgacctgg gctacacacg tgcataatg gatggtacaa 1260  
 cgagttgcga actcgcgaga gcaagctaatt ctcttaaagc cattctcagt tcggactgta 1320  
 ggctgcaact cgcctacacg aagtcggaat cgctagtaat cgcggatcag catgccgcgg 1380  
 tgaatacgtt cccgggcctt gtacacaccg cccgtcacac catgagagtt tgcaacaccc 1440  
 aaagtcggtt cggtaacctt cgggagccag ccgcctaagg tggggcagat gattagggtg 1500  
 aagtcgtaac aaggtagccg taggag 1526

<210> 4  
 <211> 484  
 <212> DNA  
 <213> *Lactobacillus pseudocollinoides*

<220>  
 <221> source  
 <222> (1)..(484)  
 <223> strain="SBC8057"

<400> 4  
 ctgggtgtct gcatgggtg gggcatccgt gtgaacgcgc tgtctccgaa ctggacgtta 60  
 aggtcgttcg ggaocgcaag cggtaactaca tggactttgc gtacggccac gttaagaccc 120  
 caatgaaggt cattgacgaa gggttaccag aaaacattcg cgggaccacg gtgcacttct 180  
 tgccggaccc agatattttc cgggaaacca ctacgtacga cattaagatc ctgaccaccc 240  
 ggatccgcga gctggcttcc ttaaacaaagg gtctgcgcat tactatccgt gatgagcggc 300  
 ctgacgagcc aactgaacaa tcctttatgt acgaaggcgg gatccgtcat tacgttgaat 360  
 atttaataaa aaacaaggat gtcattttcc ctgaaccaat ctatgttgaa ggtgaagaaa 420  
 agggcatcac ggttgaagtt gcgttcgagt ataccgacga ctaccactca aacctgttga 480  
 cggt 484

<210> 5  
 <211> 330  
 <212> DNA  
 <213> *Pediococcus damnosus*

<220>  
 <221> source  
 <222> (1)..(330)  
 <223> strain="SBC8023"

<220>  
 <221> misc\_feature  
 <222> (19)..(19)  
 <223> n stands for any base

<400> 5  
 ttattgtgcc tgtcaaatnc aagttcttga aggtttggaa gcagttagaa aacgtcccgg 60  
 aatgtatatt ggggcaacaa gtgcccaagg actccatcat ttagtttggg aaattattga 120  
 taacggaatt gatgaagctt tagccgggtt tgccgataaa atcgatgtga cggttgaaaa 180  
 agataatagc attacggttt ttgataatgg ccgaggaatt ccagttggaa tccaggctaa 240  
 gactggtaaa ccagccctag agacagtttt cacaattttg catgccggtg gtaagtttgg 300  
 cggcggcggg tataaagttt caggtgggta 330

<210> 6  
 <211> 21  
 <212> DNA  
 <213> Artificial

<220>  
 <223> a primer for *L. hexosus*  
 <400> 6  
 gcggtaaagt taatactgag c 21  
 <210> 7  
 <211> 20  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> a primer for *L. hexosus* or *L. pseudocollinoides*  
 <400> 7  
 atkccctttt cktcaccttc 20  
 <210> 8  
 <211> 18  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> a primer for *L. pseudocollinoides*  
 <400> 8  
 gttcgggacg gcaagcgg 18  
 <210> 9  
 <211> 17  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> a primer for *P. damnosus*  
 <400> 9  
 aagttcttga aggtttg 17  
 <210> 10  
 <211> 16  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> a primer for *P. damnosus*  
 <400> 10  
 tcggccatta tcaaaa 16  
 <210> 11  
 <211> 21  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> a primer  
 <400> 11  
 tggttaaata ccgtcaaccc t 21  
 <210> 12  
 <211> 20  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> a primer  
 <400> 12  
 ggataccgtc actgcatgag 20  
 <210> 13  
 <211> 18  
 <212> DNA  
 <213> Artificial  
 <220>

<223> a primer	
<400> 13 ttgaataccg tcaacgtc	18
<210> 14 <211> 20 <212> DNA <213> Artificial	
<220> <223> a primer	
<400> 14 ccatgtggtc acttaaattc	20
<210> 15 <211> 19 <212> DNA <213> Artificial	
<220> <223> a probe	
<220> <221> modified_base <222> (1)..(1) <223> LC Red640 labelled	
<220> <221> modified_base <222> (19)..(19) <223> phosphorylated	
<400> 15 cgccactcgc ttcattgtt	19
<210> 16 <211> 20 <212> DNA <213> Artificial	
<220> <223> a probe	
<220> <221> modified_base <222> (1)..(1) <223> LC Red640 labelled	
<220> <221> modified_base <222> (20)..(20) <223> phosphorylated	
<400> 16 cgccaccac atcaattaac	20
<210> 17 <211> 20 <212> DNA <213> Artificial	
<220> <223> a probe	
<220> <221> modified_base <222> (1)..(1) <223> LC Red705 labelled	
<220> <221> modified_base <222> (20)..(20) <223> phosphorylated	
<400> 17 cgccactcac tttatagttg	20

<210> 18	
<211> 18	
<212> DNA	
<213> Artificial	
<220>	
<223> a probe	
<220>	
<221> modified_base	
<222> (1).. (1)	
<223> LC Red705 labelled	
<220>	
<221> modified_base	
<222> (18).. (18)	
<223> phosphorylated	
<400> 18	
cgccactcat ccgatgtt	18
<210> 19	
<211> 22	
<212> DNA	
<213> Artificial	
<220>	
<223> a probe	
<220>	
<221> modified_base	
<222> (22).. (22)	
<223> FITC labelled	
<400> 19	
ggttaccac gtgttactca cc	22
<210> 20	
<211> 23	
<212> DNA	
<213> Artificial	
<220>	
<223> a probe	
<220>	
<221> modified_base	
<222> (23).. (23)	
<223> FITC labelled	
<400> 20	
gtggaagggtg aagaaaagg aat	23
<210> 21	
<211> 24	
<212> DNA	
<213> Artificial	
<220>	
<223> a probe	
<220>	
<221> modified_base	
<222> (1).. (1)	
<223> LC Red705 labelled	
<220>	
<221> modified_base	
<222> (24).. (24)	
<223> phosphorylated	
<400> 21	
ggttgaagtt gctttacagt acac	24
<210> 22	
<211> 21	
<212> DNA	

<213> Artificial	
<220>	
<223> a probe	
<220>	
<221> modified_base	
<222> (21).. (21)	
<223> FITC labelled	
<400> 22	
cttgtggtag accctcttca a	21
<210> 23	
<211> 18	
<212> DNA	
<213> Artificial	
<220>	
<223> a probe	
<220>	
<221> modified_base	
<222> (1).. (1)	
<223> LC Red640 labelled	
<220>	
<221> modified_base	
<222> (18).. (18)	
<223> phosphorylated	
<400> 23	
gtgcattggc gtcttcac	18
<210> 24	
<211> 19	
<212> DNA	
<213> Artificial	
<220>	
<223> a primer	
<400> 24	
cgagcttcg ttgaatgac	19
<210> 25	
<211> 21	
<212> DNA	
<213> Artificial	
<220>	
<223> a primer	
<400> 25	
ggtcattcgt ggcgggaaaa a	21
<210> 26	
<211> 21	
<212> DNA	
<213> Artificial	
<220>	
<223> a primer (GYPF)	
<400> 26	
ggwtayaarg twtcwgtgg t	21
<210> 27	
<211> 18	
<212> DNA	
<213> Artificial	
<220>	
<223> a primer (GYPR)	
<400> 27	
tcatgygtwc acctcat	18

<210> 28  
 <211> 23  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> a primer (GP1-F)  
  
 <220>  
 <221> misc\_feature  
 <222> (7)..(7)  
 <223> n stands for any base  
  
 <220>  
 <221> misc\_feature  
 <222> (11)..(11)  
 <223> n stands for any base  
  
 <220>  
 <221> misc\_feature  
 <222> (12)..(12)  
 <223> n stands for any base  
  
 <220>  
 <221> misc\_feature  
 <222> (14)..(14)  
 <223> n stands for any base  
  
 <220>  
 <221> misc\_feature  
 <222> (20)..(20)  
 <223> n stands for any base  
  
 <400> 28  
 attatgntgc nngncaaata caa 23  
  
 <210> 29  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> a primer (GP1-R)  
  
 <400> 29  
 accaccwgaw acytrrtawc c 21  
  
 <210> 30  
 <211> 21  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> a universal primer 16S rRNA gene  
  
 <400> 30  
 tggagagttt gatcctggct c 21